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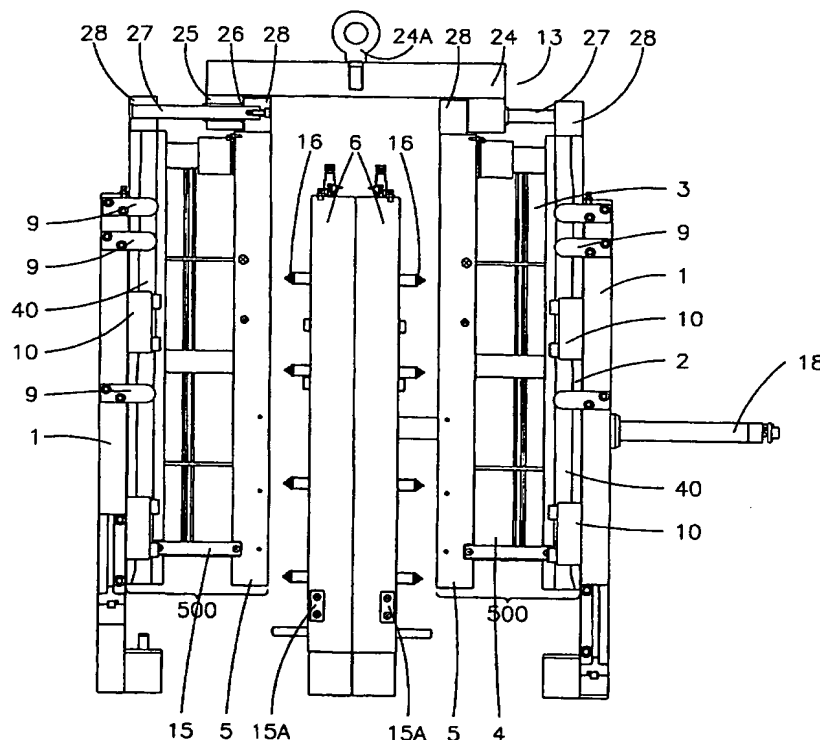
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[Continued on next page]

(54) Title: MODULAR MOLD CHANGE SYSTEM



(57) Abstract: A method of removing components of an injection mold machine, comprising a core assembly including a master core plate (1), a core plate (2) releasably secured to said master core plate, said master core plate including guide means (9) for guiding said core plate (2) relative to said master core plate (1); a core insert (3) secured to said core plate (2); a cavity assembly comprising a manifold plate (6), a first cavity plate (5) releasably secured to the manifold plate (6), a cavity insert (4) attached to the cavity plate (5), said cavity assembly moveable relative to the core assembly such that the cavity insert (4) and core insert (3) may be selectively mated together to define a cavity therebetween, said method comprising the steps of: (a) moving the core assembly and cavity assembly into a closed position whereat the cavity insert and core insert are mated together; (b) securing said core plate to said cavity plate, thereby forming a mold module; (c) releasing the securing means which secures the cavity plate to the manifold plate; (d) opening the mold from the

closed position, until the first cavity plate disengages the manifold plate and all connections thereto, (e) releasing the securing means which secures the core plate to the master core plate; (f) lifting said mold module in a direction perpendicular to the direction of motion between said open and closed position, said module being guided in said perpendicular direction by said guide means.

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A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 106 265 A (VON HOLDT JOHN W) 22 August 2000 (2000-08-22) column 3, line 39 - column 5, line 64; figures 1,5,8	1-11, 14-23
Y	US 4 500 274 A (CYRIAX WILHELM ET AL) 19 February 1985 (1985-02-19) column 7, line 1 - column 10, line 13; figures 1-8	1,3,4, 7-10, 14-16, 18-20,23
Y	DOUGLAS M. BRYCE: "Plastics Injection Moulding... manufacturing process fundamentals" 1996, SOCIETY OF PLASTICS ENGINEERS , DEARBORNE,MI , XP002288452 page 72, line 1 - page 78, line 11	1-11, 14-23
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

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X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000403

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 6 171 094 B1 (VON HOLDT JOHN W) 9 January 2001 (2001-01-09) column 2, line 12 - column 4, line 65; figures 1,2,6,7</p> <p style="text-align: center;">-----</p>	24-30,33

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2004/000403

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
1-11, 14-30, 33
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/CA2004 /000403

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11, 14-23

Method for changing a mould in an injection moulding machine.

2. claims: 12, 13

Hoist bar

3. claims: 24-30, 33

Apparatus for supporting mould plates on guide way or tie bar within a moulding machine

4. claims: 31-32

Apparatus for tightening a mould module on an injection moulding machine.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000403

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6106265	A	22-08-2000	NONE	
US 4500274	A	19-02-1985	DE 3215567 A1 AT 35644 T DE 3377339 D1 EP 0092686 A1 JP 58201622 A	27-10-1983 15-07-1988 18-08-1988 02-11-1983 24-11-1983
US 6171094	B1	09-01-2001	CA 2118369 A1 CN 1106734 A DE 4438969 A1 FR 2711941 A1 GB 2283936 A IT MI942186 A1 JP 7256700 A	02-05-1995 16-08-1995 24-05-1995 12-05-1995 24-05-1995 02-05-1995 09-10-1995